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| EXAMINER |
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HASSANZADEH, PARVIZ

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| ART UNIT | PAPER NUMBER |
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1763

DATE MAILED: 03/13/2003

14

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/839,360

Applicant(s)

LAI ET AL.

Examiner

Parviz Hassanzadeh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-52 is/are pending in the application.
- 4a) Of the above claim(s) 12-52 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-52 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 July 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☒ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 . 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-11, 18-20, 22-39, 41-45, 49 and 50 drawn to apparatus, classified in class 118, subclass 723I.
- II. Claims 12-17, 21, 40, 46-48, 51 and 52, drawn to method, classified in class 438, subclass 710.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the method does not require a transformer-coupled plasma generator plate having a plurality of through holes forming conduits from a first side to a second side of the plate, thus, the process can be practiced by a materially different apparatus.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

This application contains claims directed to the following patentably distinct species of the claimed invention:

Species 1, Embodiment 1, Fig. 1A, pages 7-12;

Species 2, Embodiment 2, Fig. 2A, page 15;
Species 3, Embodiment 3, Fig. 3A, page 16;
Species 4, Embodiment 4, Fig. 3B, pages 16-17;
Species 5, Embodiment 5, Fig. 3C, page 17;
Species 6, Embodiment 6, Fig. 3D, page 17;
Species 7, Embodiment 7, Fig. 3E, pages 17-18;
Species 8, Embodiment 8, Fig. 3F, 3G, page 18;
Species 9, Embodiment 9, Fig. 4A, pages 18-19;
Species 10, Embodiment 10, Fig. 4B, pages 19-20;
Species 11, Embodiment 11, Fig. 6A, pages 20-22;
Species 12, Embodiment 12, Fig. 7A, pages 22-24;
Species 13, Embodiment 13, Fig. 8A, pages 25-26.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, no claims are fully generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after

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the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

During a telephone conversation with William L. Shaffer on 3/3/03 a provisional election was made with traverse to prosecute the invention of Species I of group I (apparatus), claims 1-11. Affirmation of this election must be made by applicant in replying to this Office action. Claims 12-52 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Oath/Declaration

It does not identify the city and either state or foreign country of residence of each inventor. The residence information may be provided on either on an application data sheet or supplemental oath or declaration.

It does not identify the mailing or post office address of each inventor. A mailing or post office address is an address at which an inventor customarily receives his or her mail and

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may be either a home or business address. The mailing or post office address should include the ZIP Code designation. The mailing or post office address may be provided in an application data sheet or a supplemental oath or declaration. See 37 CFR 1.63(c) and 37 CFR 1.76.

It does not identify the citizenship of each inventor.

Specification

The disclosure is objected to because of the following informalities: on page 11, line 27, it is suggested to delete "40" and substitute therefor "140" in accord with Fig. 1A.

Appropriate correction is required.

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: 119 in Fig. 1A. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

The drawings are objected to because in Fig. 1D the primary coil 149 has been shown as 49, see page 14, line 15. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 10 is rejected under 35 U.S.C. 102(e) as being anticipated by Mahoney et al (US Patent No. 6,432,260 B1).

Mahoney et al teach a plasma processing apparatus including a plasma generating chamber 1 (plasma generating plate) comprising: two ends opening into a process chamber 2 (a first side and a second side) ; and a first conduit passing from the first side to the second side through a first transformer core 9 (9a) within the plasma generator plate 1 as shown in Fig. 1; and a second conduit passing from the first side to the second side through a second transformer core 9b (Fig. 2) (column 6, line 14 through column 7, line 67).

Claim 1, 3-8, 10 and 11 is rejected under 35 U.S.C. 102(e) as being anticipated by Shun'ko (US Patent No. 6,392,351 B1).

Shun'ko teaches a substrate processing chamber comprising: a chamber body 106, 108; a chamber top supporting an object 105 disposed on the chamber body 106 ; and a transformer-coupled plasma generator plate 109 disposed between the chambers 106, 108 having a plurality transformer cores 114, 116 within the transformer-coupled plasma generator plate and a plurality through holes 110, 112 formed by quartz tubes 111, 113 forming conduits from a first side 106 of the transformer-coupled plasma generator plate to a second side 108 of the transformer-coupled plasma generator plate, a first conduit 110 passing through a first transformer core 114.

Further regarding claims 3: the plate 109 is flat as shown in Figs. 6 and 6a.

Further regarding claims 4: the first core 114 having a first primary coil (not shown) and the second core 116 having a second primary coil (not shown) which are connected to a single RF power supply such as that shown in Fig. 7.

Further regarding claim 5: the cores 114, 116 comprises ferrite material.

Further regarding claims 6, 7, 11: conduits are formed of quartz tubes (*dielectric spacer*); it is the Examiner's position that chamber wall (*a remainder of the an outer surface of the generator plat comprising*) is typically made of aluminum (*an electrical conductor*).

Further regarding claim 8: an RF power source operates on a relatively low frequency of 60 kHz (column 3, lines 40-62, column 4, line 65 through column 5, line 40).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(c), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shun'ko (US Patent No. 6,392,351 B1) in view of Smith et al (US Patent No. 6,486,431 B1).

Shun'ko teaches all limitations of the claims as discussed above except for a second conduit not passing through a transformer core.

Smith et al teach a plasma source wherein a single magnetic core 20 is arranged around one of a split line and the other split line is used as return path such that a plasma 14 is circulated through the two split lines (column 5, line 60 through column 6, line 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the split line mechanism as taught by Smith et al in the apparatus of Shun'ko as an art recognized alternative method of returning current through a conduit not containing a second core. See MPEP 2144.06, Art Recognized Equivalent for the Same Purpose, Substituting Equivalents Known for the Same Purpose (in re Fout, 675 F.2d 297, 213 USPQ 532 (CCPA 1982)).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Parviz Hassanzadeh whose telephone number is (703)308-2050. The examiner can normally be reached on Tuesday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (703)308-1633. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9310 for regular communications and (703)872-9311 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.

P. Hassanzadeh
Parviz Hassanzadeh
Examiner
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March 5, 2003